(2) Japanese Patent Application Laid-Open No. 5-347412 (1993):
"SEMICONDUCTOR INTEGRATED CIRCUIT"

The following is a brief description of the invention disclosed in this publication.

Figure 2 is a cross section to explain the second embodiment of the invention. A contact hole 23 reaches to a silicon substrate 10 through an insulating material layer 11 and a side of an electrode conductor film 18 is contacted with the insulating material layer 11 and the silicon substrate 10 and a bottom surface of the electrode conductor film 18 is contacted with the silicon substrate 10. When an N-type silicon substrate with no more than 1×10^{17} cm^{-3} impurity concentration is used as a silicon substrate, for example, good Schottky barrier between the electrode conductor film 18 and the silicon substrate can be formed. Thus, by setting the silicon substrate 10 at the highest potential used within a semiconductor integrated circuit, the conductor film 18 and the silicon substrate 10 can be electrically insulated. Furthermore, in case that a P-type silicon is used as the silicon substrate 10, the silicon substrate 10 is set at the lowest potential used within a semiconductor integrated circuit.

On the other hand, because the electrode conductive film 18 and the silicon substrate 10 are contacted each other directly, heat resistance can be made extremely low. Even though leak current will be generated at some extent in a portion of Schottky barrier, there are no problems unless it is for low power consumption.

Since W (tungsten) tends to react easily with silicon, it is desirable to interpose Ti (titanium) or TiN (titanium nitride) therebetween, not using W (tungsten) only as the electrode conductive film 18.